Frankly Speaking

Conserve Effectively

IN a nation engaged, as we are, in a war for its very existence, it is a lamentable fact that no clear-cut idea of a proper emergency transportation policy has been established in the minds of those most affected—the people of the United States.

Out of the welter of conflicting statements, the public has become so confused that it is remarkable any progress has been made in group riding and staggered hours as suggested by the Office of Defense Transportation about four months ago.

Last week a new rubber "mine" was miraculously unearthed. The next morning it was learned that this source of supply had already been included in calculations of rubber production. One day the headlines scream there will be plenty of tires for civilians. The following day this story is qualified by a half dozen "ifs", any one sufficient to destroy the whole scheme.

The hard fact is that there will be no tires for passenger automobiles until well after the war, except a limited number for those cars in the most essential use. No authoritative spokesman in Washington has made any contrary statement since Pearl Harbor.

Accept this fact as indisputable; then it follows that every means at the nation's disposal must be exercised to conserve our fast-disappearing supply of automobile tires to avoid a major transportation crisis.

Group riding in passenger automobiles is one important conservation measure, but group riding can conserve rubber only when the group is made up of those to whom other transportation is not available. Much rubber is being wasted unnecessarily by a misunderstanding of the true objective of group riding; which is *conservation of rubber* not merely *filling cars with people.* In many places such emphasis has been placed on group riding that automobiles are being used when they should have remained in the garage, driven by persons who believe they are being patriotic because they are hauling a full load.

Traffic engineers, knowing the facts, have an obligation to give proper direction to an effective conservation measure only when on a formalized schedule for those who must use automobiles for their necessary transportation, so that only four tires are needed at a time when from 12 to 20 would otherwise be required. To wear out even four tires unnecessarily is to waste rubber and this is against the national interest.

Member, Board of Direction

VOLUME XII AUGUST, 1942 NUMBER 16

TRENDS IN SPEED AND CAR OCCUPANCY

by WILBUR S. SMITH

THE Engineering Research Committee of the Institute of Traffic Engineers is now collecting factual information showing trends in motor vehicle travel following the rationing of tires, automobiles and gasoline.

The data on speeds and occupancy are herewith available for TRAFFIC ENGINEERING.

Vehicular Speeds

Nebraska — The Traffic Engineering Division of the Nebraska State Highway Department has collected the following data on vehicular speeds over straight level rural highways. The studies are being continued.

Roadway	85 Percentile Speed Prior to Dec., 1941	April 1942
Two-lane concrete, not zoned—day	60	54
Two-lane concrete, 60 mph zone—day	55	51
One-way black top, 60 mph zone—day	61	59
Two-lane concrete, 60 mph zone—night	52	48
Two-lane concrete, 50 mph zone—day	54	52
Two-lane concrete, 30 mph zone—day	42	42

M.P.H.	Nebraska Passenger		Foreign Passenger		Trucks	
	July, '41	May '42	July '41	May '42	July '41	May '42
85% Speed	58	50	61	54	46	40
Average Speed	51	44	56	49	44	37

Missouri — The Safety Bureau of the Missouri State Highway Department is making periodic speed studies at locations where conditions are favorable to high speeds. Some of the results obtained from these studies are given in the following table.

Legal limits were not changed at any of the above locations between the time of the first and second survey. Additional studies will be carried out to determine the effect of the blanket 40 mph speed limit.

Location No. 1	1941	1942				
		Jan.	Feb.	March	April	May	June
Maximum Pass. Car	89	84	78	77	77	90	79
Average Pass. Car	54	52	52	52	51	52	49
Heavy Trucks	43	43	44	41	44	42	43
Buses	55	55	55	55	56	57	50

Location No. 2	1941	1942			
		April	May	June	July
Maximum Pass. Car	94	85	84	76	86
Average Pass. Car	53	50	50	50	49
Heavy Trucks	45	44	44	44	43
Buses	55	58	58	58	51

Minnesota — The Division of Traffic Engineering of the Minnesota Department of Highways supplied the following speed data:

South Carolina—Speeds were measured on rural highways in South Carolina at three locations. The combined results are shown in the following table:

	February, 1940		July, 1942	
	Average Speed	85% Speed	Average Speed	85% Speed
S. C. Pass.	43	54	40	48
Out-of-State Pass.	47	58	46	57

A rural road servicing a large army post was studied separately. The following speed results were noted:

Date	Civ. Pass Av.	85%	Top	Army Pass Av.	85%	Top	Civ. Trucks Av.	85%	Top	Army Trucks Av.	85%	Top
Aug. 1941	43	55	70	39	46	52	37	46	62	35	41	52
Oct. 1941	39	48	80	46	50	52	39	48	70	35	40	52
Dec. 1941	39	60	80	40	48	52	36	47	57	39	44	57
July 1942	39	49	80	40	50	60	39	45	62	40	46	55

Hartford, Connecticut — Charles Upham, Jr., submits the following preliminary findings from a war traffic program:

Station Number	Speed Limit	5-22-40 % Violators	8-22-40 % Violators	5-1-42 % Violators
1	30	22	33	24
2	30	15	38	12
3	30	15	21	3
4	30	18	37	16
5	30	22	46	25
6	30	16	22	22
7	30	33	47	9
8	35	19	30	5
9	35	13	32	2

Illinois—The Division of Traffic Control of the Illinois Department of Highways has conducted monthly studies of vehicular speeds at 40 stations for purposes of comparison with speeds prevailing at similar locations prior to our entry into the war. Out-of-state passenger vehicles traveled at considerably higher speeds than Illinois vehicles. Truck speeds, especially those of the heavier types, were generally higher.

The following table shows the percentage distribution of passenger vehicle speeds.

Speed	Total Per Cent of Vehicles Traveling at and Below Listed Speed 1938	April, 1942	June, 1942
25	1	1	2
30	5	7	8
35	15	19	27
40	28	40	50
45	58	68	77
50	71	81	88
55	87	92	96
60	96	97	98
65	99	99	99
70	100	100	100

Occupancy of Vehicles

Kansas City—The following information was submitted by T. J. Seburn, Traffic Engineer, showing vehicular occupancy.

Month	Vehicles Checked	Persons Per Vehicle
February	16,000	1.6
March	16,000	1.6
April	16,000	1.6
May	16,000	1.6
June	16,000	1.7

South Carolina — The occupancy of vehicles on rural state highways was recently observed, and comparisons were made with the occupancy of vehicles at the same locations in 1940.

Type Vehicle	Occupancy (Including Driver) Feb., 1940	July, 1942
S. C. Pass.	2.0	2.6
Foreign Pass.	2.2	2.4
Total Pass.	2.0	2.5
Trucks	—	1.9

A survey of cars used by workers at the Charleston, S. C., Navy Yard in December, 1941, revealed an average occupancy (driver included) of 3.1 persons per passenger vehicle. A sample count made in May, 1942, showed that the occupancy was 3.3 persons per passenger vehicle.

Hartford, Connecticut — In checking the occupancy of more than 25,000 passenger seats in vehicles in February on Hartford business streets, 81 per cent were found to be unoccupied. (The driver's seat was excluded.) Another check followed several weeks later, indicating the percentage of unoccupied seats had dropped to 78 per cent and the number of persons carried per vehicle had risen from 1.7 to 1.8. On the basis of an average vehicle capacity, driver included, of 3.4, 48 per cent of the capacity was utilized

at the time of the first survey and 51 per cent at the time of the second study.

Boston, Massachusetts — Mr. P. T. Desmond, Traffic Engineer of the Boston Traffic Commission, estimated that passenger cars averaged about 1.7 persons per car with a variance of from 1.6 to 2.4, the latter figure on approaches to defense plants.

All Institute members are urged to cooperate with the committee by mailing information on past and present traffic conditions to Wilbur S. Smith, Traffic Engineer, South Carolina State Highway Department, Columbia, South Carolina.

Compiled by Wilbur S. Smith, (Mem. I.T.E.), Chairman, Engineering Research Committee, Institute of Traffic Engineers.

PROVIDING TODAY FOR TOMORROW'S TRAFFIC

by I. S. SHATTUCK

NOT much can be provided during the war except those things that are necessary for the war effort, but intelligent thought can be provided to some extent and such thought should lead to engineering plans for moving tomorrow's traffic better and more safely.

Of prime importance, however, is knowledge of what tomorrow's traffic will be. This will be largely dependent upon planning. The answer to the question "What is the best plan for the future Metropolitan area?" will give a clue to what will be "Tomorrow's traffic."

Recent years have seen the construction of many improved traffic facilities. Although more of such facilities may not be provided until post-war times, plans for them can be prepared by traffic engineers and traffic-minded public officials.

Freeways. The Public Roads Administration and State Highway Departments, about five years ago, gathered and studied traffic survey data on highways in all parts of the United States. Some of the conclusions from this study, as disclosed in the 1939 report entitled "Toll Roads and Free Roads" were that the need for improved highways in and around cities is many times greater than in the open country, and that highway design must permit of the safe, fast movement of vehicles, free from interference by intersecting streets, parking, etc. — namely, that new highways should be constructed as "Freeways."

Most planners and traffic engineers had already come to the same conclusion. Several cities, including Detroit and Chicago had previously planned systems of superhighways and Limited Ways. The Westchester County parkway system in New York State was in existence, as was the New Jersey freeway system feeding the Hudson River Bridge. The Arroyo Seco Parkway or Freeway, although fairly recently completed was first conceived as a freeway a dozen or more years ago.

As a result of a recent comprehensive traffic and transportation survey of the entire Los Angeles Metropolitan area, and a consideration of the Freeway plans already proposed by other agencies for portions of this area, the Regional Planning Commission of Los Angeles County is studying a system of freeways of first priority importance; construction to be recommended when funds and materials are available.

Parking. Freeway building for the bringing of extra thousands of automobiles to central business districts and central industrial areas is not practical unless terminal facilities, namely, automobile parking spaces, are suffi-

cient or unless their rapid construction is assured.

If nothing is done in central business districts to provide parking spaces for the traffic of tomorrow, there will be little value in feeding traffic to these districts by way of new freeways. The traffic of tomorrow must have ample and conveniently located parking spaces at terminal points, and it is safe to say that outlying terminals where such spaces can be had will enter into successful competition with central terminals where parking facilities are inadequate. Thus, for purely defensive reasons, the central business interests must plan now in order to assure provision of ample offstreet parking for the traffic of tomorrow. The result of not planning will be no business, for curb parking has already proved inadequate.

Traffic Plans. The war has focused attention on the necessity for establishing routes for military and for various other emergency purposes. Special assignment of traffic routes for specific purposes has long been desirable. The trained traffic engineer uses this tool, but unfortunately there are too few such engineers in our metropolitan areas. The traffic of tomorrow must move along the routes best fitted to accommodate it and somehow plans to provide these routes must be made.

Complicated intersections of surface streets by providing islands to separate and channelize traffic movements can be very effective. Designing adequate channelizing schemes now for tomorrow's traffic is greatly to be desired.

Certain cities have made very good progress in lane striping. Adequate lane striping will increase traffic capacity of a given street, will increase safe speed of operation, will secure more regular curb parking and will reduce improper turns at intersections.

Curb parking elimination has been used as a possible wartime measure on narrow streets which have trolley and bus operation and should be retained after the war.

Speed zones should be established for safe vehicle operation.

Traffic Coordination in Metropolitan Areas. The agencies having authority over highway planning and over traffic regulation and control in Metropolitan areas are usually the following: Public Roads Administration, State Highway Commission, State and City Police departments, City and County engineers, City and County and State Planning agencies.

Metropolitan highway and traffic policies of these various agencies are divergent. It is necessary to plan now for the coordination that is desirable in handling tomorrow's traffic. Agreement is needed on the following:

Agreement on supervision of a continuous traffic survey for the furnishing of up-to-date traffic information of all kinds.

Minimum uniform standards or warrants for the installation of signals, signs and traffic devices of all kinds.

Design standards for various types of streets and highways.

Property controls needed along highways; such as control over unlimited business, unlimited access to other property, outdoor advertising, and control to prevent destruction of scenic assets.

Planning will determine tomorrow's traffic. Where will people live, where will they work and how will they travel? All these require consideration now in order to determine upon some plan of post war development of the metropolitan area.

It is hardly necessary to point out that air transportation of passengers, freight, express and mail will grow by leaps and bounds after the war. One reason, of course, is because large numbers of planes and pilots will be

released from war service. Another is that additional airports will be available for use, and more are being planned.

Air transportation will compete most successfully with highway and rail transportation on long trips where time can be saved; on trips to inaccessible places for camping, hunting and general recreation; and on any trip where time is less and cost is not greater.

Los Angeles County has a Master Plan of Airports, prepared by the Regional Planning Commission assisted by an Aviation Committee of the Chamber of Commerce. Kern County and the State of California have airport plans under way. A plan for the Chicago Region has recently been completed. Such activity is indicative of that which is being carried on in many other portions of the country.

The war will put many people on foot and into street cars and buses. It is likely that people will seek residence locations where transit services are adequate. This may suggest to planners the desirability of depending more on transit facilities in the future than in the immediate past. Plans for industrial locations in the future will no doubt be guided by the location of workers' residences, and existing transit facilities. Transit facilities serving central business areas will be desirable for serving the masses living in close proximity to these areas, notwithstanding the probability of Freeway construction.

Automobile travel, compared to pre-war conditions, may be somewhat distorted. War workers may have automobiles longer than other civilians, possibly keeping them until after the war. The heaviest points of origin and destination of auto travel, particularly to and from work, may be different than in pre-war times. The degree of distortion will depend upon the length of the war, the proportion of the population engaged in war industries.

Planning and traffic will be influenced by the war. Modern war places metropolitan areas in danger from enemy air attack and the plan of future development may provide for decentralization of industry, establishment of open undeveloped areas around war industries and other "targets," network of strategic military highways, and open spaces for fire protections.

Local traffic patterns will be affected by the carrying out of such plans. It is quite important, therefore, that planning and traffic authorities begin to think along such lines so that traffic and transportation projects—new streets, freeways, transit lines, parking centers, etc., will be planned and ready for construction by the end of the war.

Condensed from a paper delivered by I. S. Shattuck (Mem. I.T.E.), Planning and Traffic Consultant, Oakland, California, at Eighth Annual Western Safety Conference, Long Beach, California, June, 1942.

TOMORROW'S TIRES

by NORMAN DAMON

TRANSPORTATION in its fullest sense is now the nation's number one problem. We must move men, materials, munitions and food. We must maintain essential civilian economy.

Production and shipping have, in turn, been the number one headache.

The first model for the world's largest 4-motored bomber plant was built within 13 months after ground was broken. The schedule under full production calls for one bomber per hour, a rate estimated to exceed the

entire Axis production of this type of craft.

Another company producing large guns began mass production 8 months ahead of schedule. These figures represent the rising tide of production in midwest areas—a tide which Donald Nelson says will not reach its crest until 1944.

And 1944 is the year when our automotive transportation, a vital part of the war effort, will be down to the rims if we continue to "drive as usual."

Demands of agriculture and industrial production on automobiles, buses and trucks are increasing. They are increasing in the face of a declining number of vehicles in operation and a decline in our tires, equipment, and adequate road facilities.

The importance to the war effort of these automotive facilities has been recognized in the sweeping powers over rubber-borne transportation given to the Office of Defense Transportation. These orders give official recognition by Federal officials for the first time to the essential transportation functions of the passenger car and more broadly to the importance of automotive transportation, both to the war effort and the maintenance of the civilian economy.

As a result of this recognition the government is moving the formulation of policies to answer two questions:

1. How many vehicles must remain in operation and how much road maintenance will be required to provide the basic transportation service now recognized as necessary during the war period?

2. What steps will be necessary to conserve existing rubber and vehicles in the hands of private owners?

The objective is clear. War effort must take precedence over civilian wishes. Only the most essential civilian transportation needs, either directly related to the war effort or to health, safety and morale can be met. The key is, of course, rubber.

The accompanying chart illustrates the present gap between available or projected source of supply, and the most essential military and civilian needs, without provision for production of tires for civilian cars.

*Consolidated crude and synthetic rubber position of the United Nations for 1942 and 1943**

1942 (Thousand Long Tons)	
Sources of supply:	
Stock pile, Jan. 1, 1942	706
New crude, less sinkings	453
Synthetic production, United States of America	28
Synthetic production, Union of Soviet Socialist Republics	54
Total supply, 1942	1,241
Requirements:	
U. S. Army and Air Corps	242
U. S. Navy and Maritime Commission	29
Lend-Lease	82
Civilian	150
Other countries	310
Total requirements, 1942	813
Surplus, end of 1942	428
1943 (Thousand Long Tons)	
Sources of supply:	
Stock pile, Jan. 1, 1943	428
New crude, less sinkings	61
Synthetic production, United States of America	300
Synthetic production, Union of Soviet Socialist Republics	72
Total supply, 1943	861
Requirements:	
U. S. Army and Air Corps	356
U. S. Navy and Maritime Commission	37
Lend-Lease	82
Civilian	120
Other countries	271
Total requirements, 1943	866
Deficit, end of 1943	5

* Prepared by Office of Price Administration for submission to Special Senate Committee to Investigate Shortage of Gasoline, Fuel Oil, and Petroleum Products, June 4, 1942.

Synthetic rubber can and will be produced. No one in a responsible position is yet convinced of the likelihood, over the next two years, at least, of producing synthetic rubber in sufficient volume to meet even our most essential needs.

The critical nature of the rubber situation as related to automobiles was summarized by Leon Henderson, head of the Office of Price Administration, to the Oil Shortage Committee of the Senate.

The summary of his statement is as follows:

If 1941 driving habits continue, only 4.6 million passenger cars will be on the roads on January 1, 1945. Nation-wide gasoline rationing would keep at least 8.5 million passenger automobiles in service through 1944. No combination of tire conservation measures, that does not include nation-wide gasoline rationing, can hope to avert a serious transportation crisis.

So much then for the problems facing the operation of our automotive transportation system.

What are the needs these vehicles are called upon to meet? Primarily they are:

To move workers, raw materials, food and muntions, to keep the Army on wheels, to maintain the essential civilian economy.

Agricultural and industrial workers must be available to do the job.

Farmers, for example, are operating 15 out of every 100 automobiles.

In the industrial area of Michigan, 75% of the workmen travel between their homes and place of employment by automobile.

In the Tacoma, Washington Shipyards, 54% drive their own cars, while more than 23% ride in the cars of fellow workmen—a total of 77%.

In the west coast airplane plants around Los Angeles, 80% of the employees reach the factory by passenger car, and at the Glenn Martin Plant near Baltimore, 98% of the workmen use automobiles.

In the movement of materials in Michigan, a survey of the State Highway Department showed some 65% of raw materials reaching the factories by motor truck, while 67% of the finished products was moved out by motor truck.

The Army moves today on rubber. With a projected fleet of probably 600,000 vehicles, based on the needs of a 5 or 6 million-man Army, we cannot minimize the importance of automotive transportation.

Pending the resumption of vehicle production and the development of synthetic rubber in quantity, the only answer is conservation.

First, conservation of manpower and manhours through intensified accident prevention.

Second, the conservation of vehicles, equipment, tires, fuel and roadways.

The need to conserve manpower is reflected in the 1941 figures on traffic fatalities. More than 22,000 workers of all kinds lost their lives in traffic accidents — 19,000 of them off-the-job.

The serious part of this problem is that the percentage of workers involved in accidents is rising. Oakland and Los Angeles, California, report 30% of all accidents involving industrial workers. San Diego reports 42%.

Since January 1, Michigan State Police report more than 50% of all accidents in areas outside cities of 20,000 population or more have involved industrial workers. Another 11% have involved commercial vehicle drivers.

Tires, equipment and irreplaceable vehicles are damaged or destroyed in every accident. This waste of manpower and equipment is a drag on our efforts toward full production.

In the conservation of vehicles, the Army is setting a noteworthy exam-

ple. The motor transport service is pushing vigorously 43 separate rubber conservation projects.

The Office of Price Administration, while primarily concerned with the rationing of gasoline in the east because of the shortage of that commodity, is at the same time giving a major impetus to the conservation of rubber through that measure.

Supplemental allotments of gasoline will be made available under the permanent rationing system to motorists organizing car-sharing clubs.

Some misunderstanding as to the necessity for nation-wide rationing of gasoline seems to have arisen from the fact that rationing is generally understood to be the means by which sparse commodities are equitably distributed among those needing them. In the east gasoline is the sparse commodity and is being rationed on that basis.

Rubber is the sparse commodity nation-wide, and in order to meter its use, gasoline rationing has been suggested as the most practicable control measure.

Every use of the motor vehicle must be measured by two standards and two only:

Is that use important to the war effort?

Is it essential to civilian health, safety, and morale?

With respect to roadways, we face the fact that revenues are declining. There will be little new construction. Even maintenance will suffer from that fact. Furthermore, road upkeep requires the use of critical war materials. Thus, with poor road repair, combined with vehicle overloading and with increasingly thinner tires, we enter a vicious and dangerous cycle for automotive transportation.

Digest of an address by Norman Damon (Affil. I.T.E.), Vice-President of the Automotive Safety Foundation, before Iowa Highway Traffic Advisory Conference, Des Moines, June 24, 1942.

Thirteenth Annual Meeting — Institute of Traffic Engineers

Sunday and Monday
October 25-26

Business Meeting of ITE Members
Sunday Afternoon, October 25

Joint Session with National Safety Council
Tuesday, October 27

The *Sixth* floor of the HOTEL SHERMAN, Chicago, Illinois has been reserved for ITE members.

War Transportation Analyses based upon practical experience is the theme of this year's Annual Meeting.

Local and State War Transportation Administrators will provide a patriotic service by attending this meeting and attacking analytically transportation problems *Vital to Victory.*

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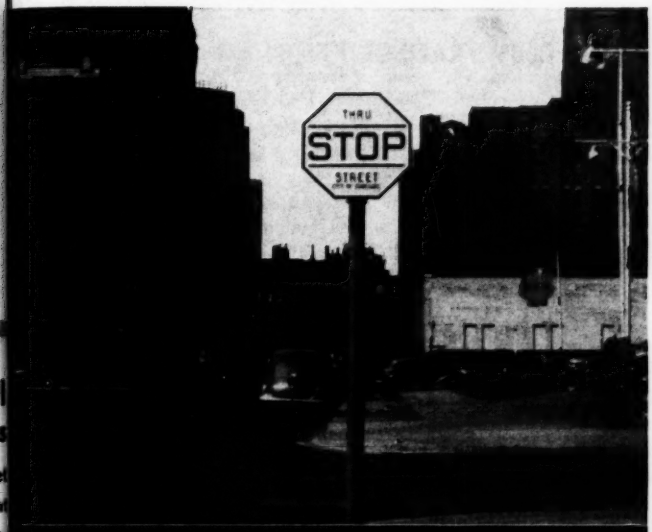

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O & D BY TRANSCRIPTION

by C. S. CUNNINGHAM

IT was pleasing to note in the May issue of TRAFFIC ENGINEERING a short description of the colored card method used by the Oregon State Highway Department. In Pittsburgh we have used four methods for obtaining O & D data, with varied results. They are as follows:

1. *International Business Machine Cards.* In 1930, in an effort to determine the amount of through traffic flowing through the Downtown Business District, we stationed police and Boy Scout crews at all the entering and leaving points to the district to issue and collect a business machine card from each vehicle entering or leaving the area.

Colored cards were used to designate type of vehicle, and of course considerable advance preparation was necessary to code punch the cards for entry point and time of entry. The time of entry was pre-punched by 5-minute intervals and sufficient cards prepared in advance for each 5-minute entry flow. The cards were collected at leaving points in 5-minute groups and bundled and marked so as to identify the time and point of leaving. This latter information then was punched on the cards when returned for recapitulation. Wide publicity was given the check by the newspapers and instructions were given motorists not to bend, fold, tear or destroy the cards. Of course any cards that were bent or folded could not be passed through the sorting machines, but this difficulty was overcome by punching new cards at the time of sorting and recapitulation. Thus the interchange of vehicles by types between throats was determined, along with the time consumed from entry point to leaving point.

2. *Colored and Numbered Card Method.* This method was used about five years ago in an effort to determine routes of travel throughout the entire city and required three days to collect the data. The city was divided into three parts, viz.: East, North, and South and West combined.

On the first day of the count, a cordon was placed on all arteries leading into the city from the east and selected intermediate points between the east city limits and the edge of the business district. These locations were termed marking or origin points and were also numbered. Each vehicle passing these points and moving toward the city was marked with a colored card placed on its bumper. The card was numbered to identify the point the vehicle was first observed. In addition, the license number, the time of observance, the ultimate destination, and the nature of the trip was recorded as to pleasure or business. At the intermediate points cars already marked were allowed to pass, while only their marking point number was observed along with the time of observance. Cars not having been marked were stopped and given origin point identification cards. Then in order to trace the marked cars, observance points were selected all over the north, south and west sections of the city and county, along with all throats to the downtown, and observers recorded the origin number, license number, and time of observance of all cars so marked moving in an outbound direction in the north, south and west areas, or in an entering direction at the throats.

On the second and third days origin points were established in a like manner in the north and southwest areas,

respectively, using different colored cards on each day and in a like manner as above explained cars were traced at observation or tracing points established at the downtown throats, and in the other areas of the city and county not considered as origin areas for that day.

We were very unfortunate in collecting this data, inasmuch as it rained on the three days selected for the collection and in a great many instances the data pads became so wet that much of the data was obliterated and of no value. A force of approximately 600 men was used on each day of this count.

3. *Notation of License Numbers.* The third method we have used considerably for small tracing counts consisted of nothing more than the notation of license numbers by 5-minute intervals. In using this method we have found it best to have an observer to call the numbers to a recorder and to have an observer and a recorder for each lane at each point of observance.

4. *Dictating Machine Method.* In 1938 O & D data was collected by dictating recording machines. This method is by far the most satisfactory for speed and accuracy. The procedure used is as follows: The volume, rate of flow and number of lanes to be observed determines the number of dictating recording machines necessary at each observation point and also determines the number of recording cylinders necessary to have on hand. The observer inserted a recording cylinder, started the machine, recorded his name, location, traffic flow he was observing and the time, and every 5 minutes, he recorded the time. When one cylinder is recorded full the observer puts on another cylinder and continues; however, he must be careful to inform his fellow observer to record all cars while the cylinder is being changed. The machines used were electrically operated and were energized by connection to service at local signal control boxes.

After the data was recorded on the cylinders, it was then transcribed by the use of dictation machines and no difficulty was encountered in interpreting the recorded data. As in all such counts, tracing procedure is the most tedious and difficult, but by the use of dictaphones the greatest degree of accuracy is accomplished with the least number of missing or lost cars. The rental cost of the machines might be considered high, but this of course must be weighed against the necessity of having accurate data and the importance of the particular project being studied.

Contributed by Charles S. Cunningham (Mem. I.T.E.), Traffic Planner, Bureau of Traffic Planning, Pittsburgh, Pa.

STAGGERED HOURS PLAN FOR HOUSTON

by THOMAS E. WILLIER

HON. JOSEPH B. EASTMAN, Director, Office of Defense Transportation, has stated that we must make maximum use of all mass transportation facilities and restrict the use of automobiles to a minimum so that we may conserve rubber and other critical materials required in the war production program. In his letter of April 24 to the Mayors of all the larger cities of this country, Mr. Eastman requested the adoption of a Plan for Conservation of Vital War Transportation and the appointment of an

Official Administrator for each city.

Inasmuch as Mr. Eastman indicated that consideration of the conservation program should be "an official administrative responsibility," Mayor C. A. Pickett designated the writer as local Transportation Administrator and requested speedy adoption of transportation conservation plans. The Houston Chamber of Commerce then appointed an Emergency Transport Committee to assist in solving emergency transportation problems.

We established the following as our objectives:

Prepare a Staggered Hours Plan for the downtown business district.

Prepare plans for providing greater capacity on buses on certain routes by staggering working hours of employees of particular companies and large manufacturing plants.

Aid war production plants with their transportation problems.

Adopt emergency traffic regulations.

Prepare plans for "Group Riding."

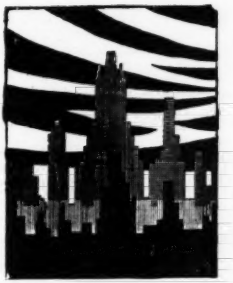
Work was started on the Staggered Hours Plan for Houston on May 14, 1942. Three separate surveys were conducted to collect factual data required in the preparation of the Plan. Questionnaires were distributed to workers in the business district to determine starting and stopping times of employees and the relative use of buses and automobiles, a field check was made of buses and bus passengers entering and leaving the business district and a survey was made of all automobiles and persons in automobiles entering and leaving the downtown district. These surveys were all completed in one day, Thursday, May 21.

Owing to the difficulty in obtaining men to make the automobile count, we utilized the services of 70 volunteer women from the Office of Civilian Defense. These women worked on the survey three hours in the morning and three hours in the afternoon and they produced accurate results. After the completion of all field surveys, the City Traffic Engineering Division analyzed the results. A program for rearranging working hours of employees in the business district was then prepared and we compiled a comprehensive report on the Houston Staggered Hours Plan. Many requests have been received for copies of the published report and the Highway Traffic Advisory Board in Washington, which is supervising the war transportation program, requested copies for its state Committees throughout the United States.

Immediately after the Houston Staggered Hours Plan was approved by the Committee on Emergency Transport it was presented to the various business organizations affected. Within only a few days, the Retail Merchants Association and all of the offices and stores agreed to adopt the proposed changed hours. The new working hour schedules became effective, substantially as proposed, on Monday June 15, only one month after work was started on the Plan. Surveys conducted by my office and by the local bus company have indicated that the staggering of working hours has alleviated to a great extent the over-crowded conditions on buses which existed prior to the adoption of the Plan and has produced a definite reduction in the average number of persons per bus during the morning and afternoon peak periods.

All of the citizens of Houston cooperated in accepting the Staggered Hours regulations which in many cases caused considerable inconvenience to workers.

An original article by Thomas E. Willier, (Mem. I.T.E.), City Traffic Engineer and Transportation Administrator, Houston, Texas.



Stop, Look and Listen

IN MEMORIAM

EDWARD J. O'MEARA — keen, progressive, friendly traffic leader of Wisconsin—died August 17, 1942.

Mr. O'Meara's death is mourned by Institute members and their wholehearted sympathies are extended to his family and many friends.

Last December, although seriously ill but with his usual foresight, he predicted in his editorial "After the War!" technological advances in automobile design and an expanded road system challenging the present traffic engineer's planning perspective and sense of responsibility.

Mr. O'Meara entered traffic work in the early 20's. Pioneered Wisconsin Traffic Safety Education and Engineering. Headed the first Wisconsin State Traffic Police. Started state-wide accident reporting. Worked on the National Committee on Uniform Acts and served on many others making far-reaching contributions.

He was Traffic Engineer of the State of Wisconsin and Member, Board of Direction, Institute of Traffic Engineers, at the time of his death.

PERSONALS

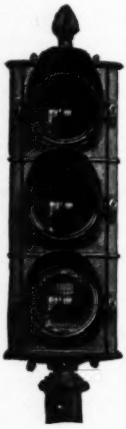
George W. Barton (Mem. I.T.E.), director, Safety and Traffic Engineering, Chicago Motor Club, has been commissioned in the United States Army and ordered to active duty with the Office of Transportation, Service of Supply. Captain Barton has already left the country.

The request for Captain Barton's services was made by the army. His duties will involve responsibilities for highway transportation of troops and supplies.

Early in 1942 Captain Barton spent several weeks in service of the Federal Bureau of Investigation conducting special war traffic schools for local police in key cities throughout the nation, as well as in Puerto Rico. He was also asked to serve as a member of the Highway Traffic Advisory Committee to the War Department. In this capacity he went to Washington, D. C. to assist in the formulation of a program and the preparation of materials for a nation-wide effort in car conservation.

Ray F. Riegelmeier (Mem. I.T.E.), Traffic Engineer, Pennsylvania Department of Highways and Advertising Manager of TRAFFIC ENGINEERING, was recently placed in charge of blackout specifications for Pennsylvania with the title of Illumination Control Officer. Mr. Riegelmeier recently completed a series of plans for Evacuation Routes in Pennsylvania.

ELECTRIC SIGNALS

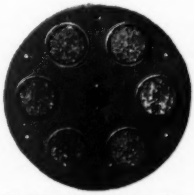


Standard signals adapted for all types of mounting. Synchronous and induction control mechanisms and accessory devices.

REFLECTOR SIGNALS

When signs are not enough or expense is a factor, reflector signals keep down both cost and accident rate.

8"; Six 1⅝" Stimsonites



15"; Six 3" Stimsonites

REFLECTOR SIGNS

Large Stimsonized and standard reflector button signs for all traffic conditions.

72" SIGN
18" LETTERS

24" SIGN
6" LETTERS

DELINEATORS

Reflector Delineation gives essential road information after dark at daylight distances. The alignment and driving limits of the road are outlined by a channel of light.

SIGNAL SERVICE CORPORATION

SS SIGNALS

ELIZABETH, N. J.

Guy Kelsey (Mem. I.T.E.), President, Vehicular Parking Ltd. and Traffic and Transportation Consultant was appointed on August 1st by the Office of Defense Transportation in the Executive Office of the President of the United States to serve as Assistant Director in its Division of Local Transport. Mr. Kelsey will bring to this position a wealth of experience and a wide knowledge of local transport problems which should be of great value to the Office of Defense Transportation in its War Transportation Conservation Program.

Merwyn A. Kraft (Affil. I.T.E.), Accident Prevention Engineer and secretary of the American Transit Association, has been appointed a member of the Transit War Manpower Advisory Committee to advise the Office of Defense Transportation's Division of Transport Personnel on manpower problems of the local transit industry.

The committee, which held its first meeting July 20, in the office of Otto S. Beyer, Director of the Division of Transport Personnel, was selected by the American Transit Association. The committee will act as a clearing house for information on manpower problems of the local transit industry which includes buses, street-cars and other forms of local mass transportation, and will keep the Division of Transport Personnel advised as to specific shortages of manpower. It also will cooperate with the Division in drawing up plans for recruiting new workers to take the place of transit employees who have been called to military service.

Facilities to be used by the committee for recruiting and training will be those established under the War Manpower Commission, the U. S. Employment Service, the War Production Board, and other governmental agencies.

John F. Gallagher (Assoc. I.T.E.), has been on active duty as a Lieutenant U. S. Navy since April 9, 1942. Lieutenant Gallagher is "On leave" as Traffic Signal Engineer and Assistant Chief, Bureau of Traffic Engineering, Philadelphia, Pa., and is assigned to the 4th Naval District, which includes Pennsylvania, Delaware and most of the state of New Jersey, as District Transportation Officer. Mail should be forwarded to 3421 Ryan Avenue, Mayfair, Philadelphia, Pa.

Andrew J. Watson, Jr. (Jun. I.T.E.), former Junior District Traffic Engineer, Pennsylvania Department of Highways, has been assigned to the Harrisburg office as Assistant Traffic Engineer with much responsibility for traffic control in Pennsylvania since Mr. Riegelmeier, Traffic Engineer of Pennsylvania, is devoting much of his time to Defense.

I.T.E. MEMBERS — WAR TRANSPORTATION ADMINISTRATORS
Maxwell N. Halsey—Michigan
Arnold H. Vey—New Jersey
Robert A. Mitchell—Philadelphia, Pa.
W. A. Van Duzer—Washington, D.C.
Thomas E. Willier—Houston, Texas
Leslie Williams—Providence, R. I.

DETECTING DEVICES

"The proprietor of a candy store was found guilty," began a Special to the New York Herald Tribune from Mineola, Long Island on June 16, 1942.

The defendant's lawyer insisted before the District Court that the slot machine in question was not a gambling device because it did not have any provision for winning prizes.

However John T. (Thin Man) Gibala (Mem. I.T.E.), traffic "device" engineer for the New York Police Department casually converted the "device" into a gambling machine in six minutes by simply taking off the cover and inserting an electrical relay which can be bought at any electrical supply

store (providing, of course, the purchaser has first consulted Ken Mackall, another "device" expert concerning the proper priority rating). Another *"eminent"* New York research engineer signing himself HSS wrote, "Traffic Engineers are apparently finding new jobs in the emergency."

MEMBERSHIP APPLICATIONS

Transfer to Full Membership

Virden A. Rittgers, City Traffic Engineer, Department of Public Safety, Richmond, Virginia

Transfer to Associate Grade

David Merrill Baldwin, Safety Engineer, Division of Motor Vehicles, Richmond, Virginia, P.O. Box 1299

Applications for New Membership

Maynard Adelbert Bebee, Junior Civil Engineer, New York State Department Public Works, Division of Highways, State Building, Buffalo, New York.

George Williamson Howie, Jr., Junior Engineer, Bureau of Traffic Engineering, Portland, Oregon.

Dwight Templeton Myers, Director of Bureau of Traffic Engineering and Planning, Johnston, Pennsylvania.

A. Glen Smoot, Traffic Division, Maricopa County Sheriff's Office, Phoenix, Arizona.

William Arthur Stancer, Traffic and Safety Engineer, Guy F. Atkinson Company, Tacoma, Washington.

CONSERVATION BY SCRAPPING

Ralph T. Dorsey (Mem. I.T.E.), Traffic Engineer of Los Angeles, California, is contributing to the city's salvage and conservation program the iron traffic buttons formerly placed in Los Angeles streets and many of its metal signs. In fact, Ralph anticipates contributing over a half-million pounds of scrap metal. The metal signs will be replaced with a marker with a concrete base, wooden pole and pressed wood sign. Such warning signs, it was pointed out would reduce the damage to automobiles striking them as well as conserve vital materials.

The iron buttons will be replaced with new buttons made of white cement. The iron buttons were painted three times a year. Mr. Dorsey expects that the savings on paint will offset the cost of the change.

OPA INSTRUCTIONS TO WAR INDUSTRY TRANSPORTATION REPRESENTATIVES

Following gasoline rationing Rhode Island OPA officials sent out a call for names of persons within industries and businesses to verify supplementary gasoline forms for workers.

The Industrial Transportation Committee of the Providence Civilian Defense Council immediately sent in the names of 337 persons who were in charge of transportation plans within 236 industries and business establishments.

At a meeting on August 6 these plant transportation officials were given the following instructions:

Tires—Vehicles should be selected which can collect and deliver the riders with the least mileage and which have the best rubber and are in the best mechanical condition.

Two or more persons in each group should have a driver's license and be able to drive the vehicle selected.

The vehicle involved must be used almost entirely for transportation to and from work.

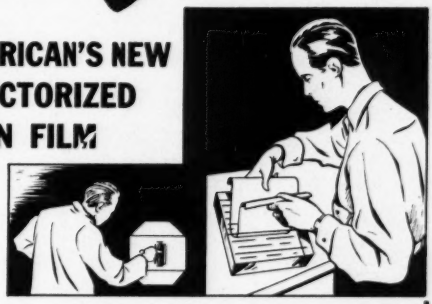
The plant transportation official or committee should discourage the driving of vehicles to and from work without the proper number of occupants. Checks should be made in plant parking lots when employees are arriving and leaving.

Workers who group together to ride in a certain vehicle must stay with that vehicle and only that vehicle will be certified for tires. Certification of coupes or cars with restricted seating capacity should be restricted.

SAVE THE STEEL FOR VICTORY

REHABILITATE YOUR OLD SIGNS

USE AMERICAN'S NEW REFLECTORIZED SIGN FILM



QUICK EASY APPLICATION IN YOUR OWN SIGN SHOP

STOCK SHEETS AVAILABLE AT LOW COST

"American" sign-finishing film is extremely flexible for mounting over embossed or debossed lettering or onto flat signs. It is furnished in sheet form to various State, County and City highway departments for sign rehabilitation use in convenient 24" x 24" sheet size. Stock colors are white and lemon yellow.

Your sign or paint shop can effect definite savings in time and money through the use of this luminescent sign film. Lettering or designations may be applied to the blank material in your sign shop by using a rubber coating device on embossed signs, silk screening or stenciling on flat signs. In using convenient stock sheets, your paint shop workers may cut odd sizes from sheets, thereby utilizing the greatest possible area of each sheet. On large runs, lettering may be secured on the sign film to your special order.

Write now for samples, prices, and full information on how to rehabilitate your old signs. Black screen lacquer, white or yellow spray enamel, metal primer and rollers are carried in stock.

AMERICAN DECALCOMANIA COMPANY, INC.
4334 WEST FIFTH AVENUE **CHICAGO, ILLINOIS**

The aim of the committee should be to fill cars to capacity. The "three passengers and driver" clause is a minimum requirement.

Defense workers who live more than a mile from a public transportation system, or whose place of business is more than a mile from the public transportation system, or who require more than an hour to travel from home to work are eligible for retread tires.

Gasoline—The local rationing board will support the mileage as certified by the plant transportation committee but retains the right to decrease that mileage if considered excessive.

Rations of individual motorists forming car-sharing clubs after rationing will continue on the same rations until the end of the present three months' period. Clubs composed of workers in different establishments must have application blanks signed by the Chairman of the War Transportation Committee of the local Civilian Defense Council.

POSTPONED

"The 31st National Safety Congress and Exposition, originally scheduled for October 6, 7 and 8 at the Stevens Hotel, Chicago, has been postponed to October 27, 28 and 29 and the Sherman Hotel, Chicago, has been selected as headquarters for this great annual safety gathering.

"The change in date and headquarters was necessitated by the precipitate acquisition of the Stevens and Congress Hotels in Chicago by the Armed Services. Some meetings will be held in the Morrison and LaSalle Hotels, thus assuring ample facilities for all sessions originally scheduled for the three-day program. The Morrison and LaSalle Hotels are within two blocks of the Sherman.

"Reservations already made for the Stevens and Congress Hotels have been cancelled, and it will be necessary for those delegates to make new reservations at one of the other downtown hotels, most of which are quite close together and conveniently located with respect to the Congress headquarters. Further information regarding the Congress and assistance in hotel reservations may be had by writing the National Safety Council, 20 North Wacker Drive, Chicago."

STATE-WIDE WAR TRANSPORTATION PLAN FOR MASSACHUSETTS

The Massachusetts State Planning Board is in the process of completing a full war transportation report covering 150,000 workers in 280 plants throughout Massachusetts. The State transportation network is being recorded on a map 16 feet long and 10 feet high, which will show railroads, railroad stations, street car and bus lines, residential zones, shopping centers and industrial locations.

The first step in this state-wide transportation plan was completed at the Fore River Shipbuilding plant at Quincy, Massachusetts. Tabulations of the questionnaires received showed that 78.8 per cent of the workers in the plant commuted by automobile. 13.5 per cent used mass transportation facilities and 7.5 per cent walked. 78 per cent of the workers lived within 10 miles of the plant but nearly a third of these workers live one mile or more from any established means of transportation.

The report concludes that "the automobile is the essential and major means of transportation; likewise that any curtailment or elimination of automobile use will cause undue hardship to the workers and impose tremendous burdens on the public transportation facilities."

Subsequent checks at the Fore River Shipbuilding plant show that the passenger load factor has increased from 1.9 to 2.7. However 32 per cent of the cars were carrying drivers only.